Subject Index to Volume 35

Acetoacetate

and malonyl-CoA regulation in skeletal muscle, E641

metabolism, quantitative analysis of, in AS-30D cells, E945

Acetylcholine

effects on insulin secretion by cultured islets from ob/ob mice, E304

Acetyl-CoA carboxylase

regulation, in muscle, E262

Acidosis

metabolic, ovine fetal leucine kinetics and protein metabolism during,

Activity

dietary restriction and, in monkeys,

Adenosine

effects on muscle glycogenolysis, E762

Adenosine 3',5'-cyclic monophosphate

in muscle glucose transport, cholera toxin and, E7

in skeletal muscle, contraction-induced signaling, GLUT-4 concentration and, E118

Adenosine 5'-triphosphate

regulation of prolactin release, E1117

Adenylate cyclase

in skeletal muscle, contraction-induced signaling, GLUT-4 concentration and, E118

Adenylyl cyclase

activity, dietary modification of, in white and brown adipose tissue of rat, E1043

Adipocytes

cell surface aminopeptidase, insulin stimulation of, E600

insulin stimulation of, and insulin receptor kinase activity, in humans, E576

lactate production by, in pigs, E957

glucose transporter, dominant negative effect of PI 3-kinase and Ras

insulin responsiveness, oxidative stress and, E935

Adipose tissue

see also Fat, body

adenylyl cyclase inhibitory pathway in, dietary modification of, in rats, E1043

IGF-I gene expression in, transient upregulation in cold-exposed rats,

leptin gene expression in, β3-adrenergic-mediated suppression of, E1031 visceral, and metabolic response to ex-

ercise, E248

white

adenylyl cyclase inhibitory pathway in, dietary modification of, in rats,

leptin gene expression in, β3-adrenergic-mediated suppression of, E1031

Adiposity

abdominal

and age-related increase in muscle sympathetic nerve activity, E976 and growth hormone secretion in adults, E1108

β-Adrenergic receptors

β₃-, and leptin gene expression, in rats, E1031

blockade

metabolic and circulatory effects of,

splanchnic metabolic and circulatory effects of, E678

effects of dietary restriction on, studies in monkeys, E901

and growth hormone secretion, E1108 increased muscle sympathetic nerve activity with, abdominal adiposity and. E976

parathyroid hormone release in, calcium-regulated, changes in, E139

protein utilization in, effects of recombinant human growth hormone and IGF-I on, E94

resistance to IGF-I associated with, attenuation by exercise, E397

Alanine

metabolism, in normal postabsorptive humans, E437

Alcohol

withdrawal, effects on thyroid hormone metabolism, E191

Alcoholism

thyroid hormone metabolism and, E191 Aldosterone

nongenomic effects of, in porcine endothelial cells, E616

secretion, in pregnancy, calcium channels and, E18

Alkaline phosphatase

gene expression, in osteoblast response to thyroid hormone, E212

Amino acids

availability

vs. dextrose, and protein flux after metabolic stress, E36

during postexercise recovery, effects on muscle protein synthesis, in dogs, E1023

branched-chain, metabolism

during exercise, E233 in humans, E1037

effects on ovine fetal insulin secretion,

interorgan exchange, after metabolic stress, E36

metabolism

in humans, E585

in insulin-dependent diabetes mellitus (IDDM), E59

suppression of proteolysis, in newborn, E592

Aminopeptidase

activity, in adipocytes, insulin stimulation of, E600

gene expression, glucose regulation of, in rats, E543

Angiotensin, see Renin-angiotensin system

Angiotensin-converting enzyme inhibition/inhibitor

effects on arginine vasopressin and baroreflex function, in normal humans, E429

Angiotensin II

sympathetic nervous system interaction with, AT1 receptor blockade and, E415

Angiotensin II receptors

AT₁, blockade, and sympathoadrenal response to insulin-induced hypoglycemia, E415

Antithrombin

heparin cofactor II and, comparative metabolism and distribution of, in rabbits, E824

activity, and macrophage arginine metabolism, E181

Arginine

effects on ovine fetal insulin secretion,

metabolism, macrophage, differential regulation of, E181

Arginine vasopressin, see Vasopressin Autonomic nervous system

and pancreatic hormone secretion, E746 in thermogenic response to food, in lean individuals, E775

Baroreflexes

effects on arginine vasopressin release, after central administration of endothelin-1, in rats, E126

function, after converting enzyme inhibition in normal humans, E429

BAY K 8644

effects on insulin secretion by cultured islets from ob/ob mice, E304

supplementation, urinary biotin analogs during, E83

Bis(maltolato)oxovanadium(IV)

antihyperglycemic effects, in streptozotocin-diabetic rats, E30 Bladder, urinary

hypertrophy, in diabetic rat, IGFBP-2 and, E297

Blood-brain barrier

corticotropin-releasing hormone transport across, acute modulation of,

glucose transport across, E716, E1016 in diabetic (db/db) mice, E267

GLUT-1 expression in, E716 modulation by 17β-estradiol, E312

Blood flow

splanchnic, β-adrenergic receptor blockade and, E678

Blood pressure

see also Hypertension

centrally administered endothelin-1 and, in rats, E126

effects of pioglitazone on, in genetically obese diabetic rats, E989

Body composition

see also Adiposity

and density of fat-free body mass, E781 dietary restriction and, in monkeys,

in fatty (fa/fa) and heterozygous (+/fa) rats, physiological differences and, E100

and growth hormone secretion in adults, E1108

growth hormone therapy and, reninangiotensin-aldosterone system activity in, E803

and nutrient-induced thermogenesis, E775

Body fat, see Adipose tissue; Fat, body **Body mass**

fat-free, density of, E781

Bone morphogenetic proteins physiological roles of, E967

Brain

glucose transporter proteins in, in diabetic (db/db) mice, E267

glucose utilization, in diabetic (db/db) mice, E267

insulin sensitivity in, in dogs, E567 rat, neuronal GLUT-3, induction by hypoglycemia, E716

thyroxine uptake and kinetics, in transthyretin-null mice, E485

Branched-chain oxoacid dehydrogenase

activity during exercise, and nutritional status, E233

Brown fat, see Adipose tissue, brown

Cachexia

see also Cancer cachexia

cardiac, in free-living heart failure patients, E469 during chronic toxoplasmosis, E908

Calcitriol

effects on pharmacokinetics of calcium and strontium in rats, E422

Calcium, ionized

in blood, and serum parathyroid hormone, in elderly healthy men, E139

Calcium channels

endothelin-1-mediated, in osteogenesis, E967

in parathyroid cells, response to magnesium, and parathyroid hormone release, E1

voltage-dependent, and aldosterone secretion in pregnancy, E18

Calcium ions

absorption, preclinical screening of strontium as marker for, E422 free intracellular, measurement of,

E282

intracellular

agouti regulation of, E379 nongenomic effects of aldosterone on, in porcine endothelial cells, E616

in parathyroid cells, response to magnesium, and parathyroid hormone release, E1

pharmacokinetics of, in rats, E422

Calories, see Energy

Calorimetry

indirect

with β-adrenergic receptor blockade, E678

of substrate oxidation in parenteral nutrition, E550

Cancer cachexia

in humans, E476

Captopril

effects, on growth hormone-induced regulation of fluid balance, E803

Cardiac cachexia

in free-living heart failure patients, E469

Cardioprotection

by fumarate, in isolated rat heart, E74

effects on coenzyme A profiles in rat liver, with hypoglycin inhibition of multiple dehydrogenases, E359

Carnitine palmitoyltransferase activity, during exercise, E1065

Catabolism

cytokine-induced, mechanisms of, in rats, E333

serum cortisol levels and, E476

Catecholamines

lipolytic responsiveness to, in diabetes, E1130

and transient induction of lipoprotein lipase gene expression in human skeletal muscle, E255

Cation currents

hyperpolarization-activated, in rat pituitary cells, E405

Chemical biopsy

in tracing liver metabolism, E51

Cholera toxin

and glucose transport in skeletal muscle, E7

Chorion

prostaglandin-endoperoxide H synthase-2 expression and activity in, peripartum, in humans, E832

Circadian rhythms, see Diurnal rhythms

Circulation

β-adrenergic receptor blockade and, E678

Citrate

and malonyl-CoA regulation in skeletal muscle, E641

Citric acid cycle

and gluconeogenesis, E476

intermediates, in human muscle, at rest and during exercise, E239

pyruvate entry into, and lipogenesis in tumors, E945

tracing, using labeling pattern of liver glutamate, E51

Clenbuterol

effects on myogenin expression, in immobilized rat muscles, E941 scoliosis reduction by, in spinal-cordinjured rat, mechanisms of, E712

Comparative Nutrition Society formation of, E1145

Compartmental model

of glucose kinetics in interstitial fluid,

Copper, dietary

deficiency, hepatic fatty acid synthase gene transcription in, E1124

Corticotropin-releasing hormone brain-to-blood transport of, acute modulation of, E312

Cortisol

serum levels, and gluconeogenesis, E476

C-peptide

serum levels, effects of IGF-I infusion

Creatine

in contracting skeletal muscle, GLUT-4 concentration and, E118

Creatine phosphate

in contracting skeletal muscle, GLUT-4 concentration and, E118

Cytokines

effects on brain-to-blood transport of corticotropin-releasing hormone,

gene expression, during chronic toxoplasmosis, E908

host wasting induced by, mechanisms of, in rats, E333

production, in zinc-deficient humans, E1002

D

Denervation

sympathetic, chemical, in rats, E227

Development

postnatal, muscle glucose uptake during, in rats, E446

Dextrose

versus amino acid availability, and protein flux after metabolic stress, E36

Diabetes mellitus

and cardiac thyroid hormone receptors, E856

complications of, effects of pioglitazone on, in rats, E989

gestational, insulin-treated, oxidative metabolism in, E1099

insulin-dependent (IDDM)

lipolytic responsiveness to epinephrine in, E1130

metabolic adaptation to protein restriction in, E59

maternal, embryonic metabolism and, in rats, E173

metabolic control in, studied using euglycemic and hypoglycemic insulin clamps, E530

mouse model, see Mice, diabetic (db/ db)

non-insulin-dependent (NIDDM) irregular insulin secretion in relatives of patients with, E218

lactate production associated with, studies in pigs, E957

rat model of, phosphoinositide metabolism in pancreatic islets of,

rat model, glucose-lowering effects of vanadium in, E30

Diacylglycerol

turnover, in resting skeletal muscle, functional differences by fiber type, E340

Diaphragm

contractile function, oxidative stress and, in aging rat, E201

and adenylyl cyclase inhibitory pathway in white and brown adipose tissue, in rats, E1043

Dihydropyridines

effects on aldosterone secretion in pregnancy, E18

1,25-Dihydroxyvitamin D3, see Calcitriol

Diurnal rhythms

of human plasma melatonin, mathematical model of, E506

Dogs

brain, insulin sensitivity in, E567 kidney, and glucose regulation during hyperglycemia, E756

peptidomimetic, renal transport of, E723

Dual-energy X-ray absorptiometry in humans, E781

Electrophysiology

of rat pituitary cells, E405 Embryonic development

in rats

maternal diabetes and, E173 retinol and, E25

Endothelial cells

intracellular calcium in, nongenomic effects of aldosterone on, E616

Endothelin

effects on osteoblast IL-6 production, E461

Endothelin-1

intracerebroventricular administration and arginine vasopressin secretion, in rats, E126

and blood pressure, in rats, E126

Endothelin receptors

ETA, osteogenic protein-1 effects on, E967

reverse transcriptase-polymerase chain reaction assay of, E461

Endothelium

vascular, nongenomic effects of aldosterone on, E616

Endotoxin

effects on zinc metabolism, in humans, E952

Energy

expenditure

daily, in free-living heart failure patients, E469

dietary restriction and, in monkeys, E901

in lean individuals, E775

oxidative, with β-adrenergic receptor blockade, E678

intake, and adenylyl cyclase inhibitory pathway in white and brown adipose tissue, in rats, E1043

Energy balance

and cytokine gene expression, during chronic toxoplasmosis, E908 with exercise, in identical twins, E248 negative, with exercise, plasma glucose and insulin responses in, E248

Epinephrine

lipolytic responsiveness to, in diabetes, E1130

and regulation of muscle glucose uptake, in rats, E649

and transient induction of lipoprotein lipase gene expression in human skeletal muscle, E255

Epitrochlearis muscle

rat

glucose transport, effects of exercise training on, E320 glucose uptake, regulation of, E649

17β-Estradiol

modulation of GLUT-1 expression in blood-brain barrier, E1016

Euglycemic hyperinsulinemic clamp insulin action during, in rhesus monkeys, E133

use in human newborn, E86

Eukaryotic initiation factor

eIF-4E, and postprandial muscle protein synthesis, E841

eIF-4G, and postprandial muscle protein synthesis, E841

Exercise

branched-chain oxoacid dehydrogenase regulation during, and nutritional status, E233

on age-associated resistance to IGF-I, E397

on GLUT-4 distribution in cell, E864 on hexosamines, in rat muscle, E848 fatty acid oxidation during, regulation

of, E1065

interaction with insulin and hypoglycemia, studied using euglycemic and hypoglycemic insulin clamps, E530 muscle protein synthesis after, studies

in dogs, E1023

negative energy balance with, plasma glucose and insulin responses in, E248

prolonged, tricarboxylic acid cycle intermediates in human muscle during,

short-term, transient induction of lipoprotein lipase gene expression, in human skeletal muscle, E255

submaximal, glucose transport and GLUT-4 in human sarcolemmal vesicles during, E385

Exercise training

effects

on glucose transport in rat skeletal muscle, E320

on glutamine and CD4+ T-cell number, E788

on serum leptin levels, gender differences in, in humans, E562 reversal of insulin resistance with,

E864

Fat, body

see also Adipose tissue; Obesity

in fatty (fa/fa) and heterozygous (+/fa)rats, physiological traits underlying, E100

and metabolic response to exercise, E248

Fatigue

skeletal muscle

in aging rats, E201 and branched-chain oxoacid dehydro-

genase regulation, E233 tricarboxylic acid cycle intermediates in human muscle and, E239

Fatty acids

see also Glucose-fatty acid cycle

chain length, and substrate oxidation in parenteral nutrition, E550 free

metabolism, in normal postabsorptive humans, E437 and short-term exercise, E262

medium-chain, oxidation during exercise, regulation of, E1065

and metabolic control in diabetes, studied using euglycemic and hypoglycemic insulin clamps, E530

metabolism, in resting skeletal muscle, functional differences by fiber type, E340

oxidation

during exercise, regulation of, E1065 in skeletal muscle, E262

Fatty acid synthase

gene expression, in liver, in copper deficiency, E1124

Feeding

effects on hexosamines, in rat muscle,

protein synthesis with, after intrauterine growth retardation, in neonatal pigs, E877

regulation of translation initiation by, E841

Fetus

mammalian

in diabetic pregnancy metabolic alterations in, E173 and superoxide generation in neural tissue, E173

endocrine responses to subacute stress, E817

growth, E275

adaptation to chronic hypoglycemic hypoinsulinemia, E107

insulin secretion, effects of arginine and glucose on, E68

leucine kinetics and protein metabolism during acute metabolic acidosis, E275

leucine metabolism, adaptation to chronic hypoglycemic hypoinsulinemia, E107

lung development, retinol and, E25 threonine utilization by, E892

Fluid balance

growth hormone-induced regulation of, renin-angiotensin-aldosterone system activity in, E803

Food intake

β₃-adrenergic-mediated suppression of, E1031

in cold-exposed rats, and brown adipose tissue hyperplasia, E453 in propionate-infused sheep, E997

Food restriction

vanadium with, antihyperglycemic effects, in streptozotocin-diabetic rats, E30

Fumarate

cardioprotective effects, in perfused rat heart, E74

metabolism, in perfused rat heart, E74

Gender differences

in exercise training effects on serum leptin, in humans, E562 and growth hormone secretion, in adults, E1108

in progesterone-induced changes in sleep, E885

Gene expression alkaline phosphatase, in osteoblast response to thyroid hormone, E212

Gene expression (continued)

cytokine, during chronic toxoplasmosis, E908

fatty acid synthase, in liver, in copper deficiency, E1124

GLUT-1, in blood-brain barrier, modulation by 17β-estradiol, E1016

IGF-I, transient upregulation in brown adipose tissue of cold-exposed rats, E453

insulin, glucose regulation of, in rats, E543

islet amyloid polypeptide, glucose regulation of, in rats, E543

isomyosin, in diabetes, E856

leptin, β_3 -adrenergic-mediated suppression of, in rats, E1031

lipoprotein lipase, in skeletal muscle, transient induction by short-term exercise, E255

myogenin, clenbuterol effects on, in immobilized rat muscles, E941

nitric oxide synthase, in myometrium of pregnant rat uterus, E1008

in osteoblast response to thyroid hormone, localization of, E212

osteocalcin, in osteoblast response to thyroid hormone, E212 prolactin, in mammotropes, E390

prostaglandin-endoperoxide H synthase-2, in chorion, peripartum, in humans, E832

regulation of, in postprandial muscle protein synthesis, E841

Genes

agouti, regulation of intracellular calcium, E379

Genetics

of metabolic response to exercise, E248

Glucagon

glycogenolytic effect of, speed of, E720 and hepatic glucose production in humans, E371

secretion, regulation, in dogs, E567

Glucagon-like peptides

GLP-2, small bowel growth induction by, and intestinal function in mice, E1050

Glucocorticoids

and fetal protein balance during acute metabolic acidosis, E275

Gluconeogenesis

in malaria, E1059

rate, calculation using labeling pattern of liver glutamate, E51

reduction by exogenous glucose, in rats, E163

regulation by glutamine, in normal postabsorptive humans, E437 relationship to serum cortisol, in hu-

mans, E476 Glucoprivation

effects on luteinizing hormone secretion, opioid mediation of, E517

Glucose

availability during postexercise recovery, effects on muscle protein synthesis, in dogs, E1023

disposal, insulin-mediated, in rhesus monkeys, E133

effects on ovine fetal insulin secretion, E68

exogenous, reduction of hepatic glucose production, in rats, E163 kinetics, in nonaccessible pools, E494 and malonyl-CoA regulation in skeletal muscle, E641

metabolism

in cancer patients, E476

in insulin-treated gestational diabetes, E1099

in pancreatic 8-cells, E696

during progressive starvation in late pregnancy, in rats, E556

recombinant human IGF-I and, differential effects of bolus vs. continuous subcutaneous delivery, E628

suppression, insulin resistance caused by, E288 in swine adipocytes, E957

molecule, recycling, serum cortisol levels and, E476

plasma levels

see also Hypoglycemia; Hyperglycemia

in fetal sheep exposed to maternal insulin-induced hypoglycemia, E107

and negative energy balance with exercise, E248

in propionate-infused sheep, E997 renal regulation of, during hyperglycemia, E756

production

see also Gluconeogenesis

carbon recycling in, serum cortisol levels and, E476

hepatic

in children, E523

reduction by exogenous glucose, in rats, E163

in malaria, E1059

in neonate vs. adult, E86

regulation of islet amyloid polypeptide gene expression, in rats, E543 thermic effect of, E678

transport

across blood-brain barrier, E716, E1016

in diabetic (db/db) mice, E267 and cell surface GLUT-4, E864 effects of PI 3-kinase and Ras on, in

3T3-L1 adipocytes, E326 during progressive starvation in late pregnancy, in rats, E556

in skeletal muscle

cholera toxin and, E7

in human sarcolemmal vesicles during exercise, E385 in ob/ob mice, E1080

turnover, during progressive starvation in late pregnancy, in rats, E556

uptake

in muscle

in postnatal development, in rats, E446

regulation, in rats, E649

and renal glucose regulation during hyperglycemia, E756

utilization

cerebral, in diabetic (db/db) mice, E267

by embryonic and fetal rat neural tissue, with maternal diabetes, E173

Glucose-fatty acid cycle

in children, E523

and malonyl-CoA regulation in skeletal muscle, E641

Glucose-6-phosphatase

in pancreatic islets, modeling and measurement of. E696

Glucose 6-phosphate

hepatic

effects of exogenous glucose on, in rats, E163

effects of insulin on, in rhesus monkeys, E133

Glucose transporters GLUT-1

in brain of diabetic (db/db) mice, E267

in denervated muscles, in rats, E661 expression in blood-brain barrier, modulation by 17β-estradiol, E1016

in growth hormone-induced insulin resistance, E1071

in rat brain, E716

in skeletal muscle, cholera toxin and, E7

GLUT-3

in brain of diabetic (db/db) mice, E267

neuronal, induction by hypoglycemia, in rat brain, E716

GLUT-4

cell surface, recruitment, and exercise, E864

in denervated muscles, in rats, E661 dominant negative effect of PI 3-kinase and Ras on, in 3T3-L1 adipocytes, E326

in growth hormone-induced insulin resistance, E1071

in skeletal muscle

cholera toxin and, E7

concentration, contraction-induced signals and, E118

effects of exercise training on, studies in isolated rat muscle, E320

in human sarcolemmal vesicles during exercise, E385 in *ob/ob* mice, E1080 during postnatal development in rats, E446

Glutamate

transport, and paracellular permeability in LLC-PK₁-F⁺ cells, E367

Glutamine

plasma level, effects of exercise training on, E788

plasma turnover, steady-state and nonsteady-state measurements of, in humans, E621

regulation of gluconeogenesis, in normal postabsorptive humans, E437

Glutathione

and hepatic fatty acid synthase gene transcription, in copper-deficient rats, E1124

renal assimilation of, E723

Glycogen

metabolism

during exercise, E233 in normal postabsorptive humans, E437

muscle levels, with exercise training, effects on glucose transport, E320

regulation of muscle glucose uptake, in rats, E649

storage, and renal glucose regulation during hyperglycemia, E756

synthesis, suppression, insulin resistance caused by, E288 Glycogenolysis

glucagon-induced, speed of, E720 in skeletal muscle, adenosine effects on, during contraction, in rats, E762

Glycogen phosphorylase

hepatic, regulation by insulin, E133

Glycogen synthase

activity, in skeletal muscle, E762 hepatic, regulation by insulin, E133

Glycolysis

suppression, insulin resistance caused by, E288

G proteins

and ADP-ribosylating toxins, E7 and inhibition of cell growth by somatostatin, E769

oxytocin receptor coupling to, in rat myometrium during labor, E870

Growth

fetal, E275

see also Intrauterine growth retardation

adaptation to chronic hypoglycemic hypoinsulinemia, in sheep, E107

Growth factors

stimulation of protein synthesis in elderly women, E94

Growth hormone

insulin resistance induced by, E1071 recombinant human, effects on protein utilization in elderly women, E94

secretion, in adults, abdominal adiposity and, E1108

treatment, renin-angiotensin-aldosterone system activity during, E803

GTP-binding proteins, see G proteins

H

Heart

isolated rat, effects and metabolism of fumarate in, E74

thyroid hormone receptors, in diabetes, E856

Heart failure

daily energy expenditure in, in free-living patients, E469

Heart rate

arginine vasopressin effects on, after converting enzyme inhibition in normal humans, E429

Heparin cofactor II

and antithrombin, comparative metabolism and distribution of, in rabbits, E824

Hepatoma cells

AS-30D, acetoacetate metabolism in, quantitative analysis of, E945

Hexosamine

in rat muscle, effects of exercise and feeding on, E848 synthesis, in ob/ob mice, E1080

Hyperglycemia

renal glucose regulation during, E756

Hypertension

with development of insulin resistance, and high-fat diet, in dogs, E147 endothelin-induced, in rats, E126

Hypoglycemia

brain sensitivity to, in dogs, E567 counterregulatory response to, and circulating insulin levels in canine brain, E567 insulin-induced

chronic, induction of GLUT-3 in rat brain neurons, E716

sympathoadrenal response to, AT₁ receptor blockade and, E415

interaction with exercise and insulin, studied using euglycemic and hypoglycemic insulin clamps, E530 and pancreatic hormone secretion, in

dogs, E746 Hypoxemia

fetal, endocrine responses to, in sheep, E817

Hypozincemia

endotoxin-induced, E952

I

IDDM, see Diabetes mellitus, insulindependent (IDDM)

Immediate early genes

c-fos, in inhibition of cell growth by somatostatin, E769

Immune function, see Immune system Immune system

effects of exercise training on, E788 zinc and, in humans, E952, E1002

Inflammation

acute phase response, zinc metabolism in, E952

In situ hybridization

for localization of osteoblast gene expression response to thyroid hormone, E212

Insulin

action, in 3T3-L1 adipocytes, oxidative stress and, E935

analogs

pharmacokinetics of, in vivo, E1089 receptor binding constants, E1089

availability during postexercise recovery, effects on muscle protein synthesis, E1023

circulating, brain sensitivity to, in dogs, E567

effects on hepatic glucose production, glucagon and, in humans, E371

gene expression, glucose regulation of, in rats, E543

interaction with exercise and hypoglycemia, studied using euglycemic and hypoglycemic insulin clamps, E530

hypoglycemic insulin clamps, E530 and malonyl-CoA regulation in skeletal muscle, E641

and muscle glucose uptake during postnatal development, in rats, E446

in fatty (fa/fa) and heterozygous (+/fa) rats, E100

in fetal sheep exposed to maternal insulin-induced hypoglycemia,

in propionate-infused sheep, E997 and transient induction of lipoprotein lipase gene expression in human skeletal muscle, E255

receptor binding, cross-linking model of, evaluation of, E1136

regulation of liver glycogen synthase and phosphorylase, in monkeys, E133

resistance, see Insulin resistance

in adult undernourished rats, E634 from cultured islets of ob/ob mice, E304

fetal, effects of arginine and glucose on, E68

irregular, in relatives of NIDDM patients, E218

oscillatory, interislet synchronization in, E981

in prediabetic state, E218

pulsatile, burst mass of, inhibition by IGF-I, E352

pulsatility, E218

regulation via ATP-sensitive potassium channel independent mechanisms, E671

signal transduction

in denervated muscles, phosphatidylinositol 3-kinase and, E661

regulation of, in human adipocytes, E576

stimulation of cell surface aminopeptidase, E600 Insulin-dependent (type I) diabetes

Insulin-dependent (type I) diabetes mellitus (IDDM), see Diabetes mellitus, insulin-dependent (IDDM)

Insulin-like growth factor binding proteins

IGFBP-2, and smooth muscle hypertrophy in diabetic rat, E297

Insulin-like growth factor I

action, with age and exercise, E397 gene expression, transient upregulation in brown adipose tissue of cold-exposed rats, E453

inhibition of insulin secretory burst mass, E352

recombinant human

differential metabolic effects of bolus vs. continuous subcutaneous delivery, E628

effects on protein utilization in elderly women, E94

and smooth muscle hypertrophy in diabetic rats, E297

Insulinoma

MIN6 cells, cell growth, inhibition by somatostatin, E769

Insulin receptors

cross-linking model of insulin interactions with, evaluation of, E1136 in growth hormone-induced insulin re-

sistance, E1071 isoforms, in aged and mildly insulindeficient rats, E607

mRNA splicing, in aged and mildly insulin-deficient rats, E607

tyrosine kinase activity, in human adipocytes, E576

Insulin receptor substrate-1

in growth hormone-induced insulin resistance, E1071

Insulin resistance

and agouti regulation of intracellular calcium, E379

caused by suppression of glucose metabolism, in rat skeletal muscle, E288

effects of pioglitazone on, in genetically obese diabetic rats, E989

genetic model of, see Mice, ob/ob growth hormone-induced, E1071

insulin receptor isoforms and, in aged and mildly insulin-deficient rats, E607

reversal, by exercise training, E864

Insulin resistance (continued)

in skeletal muscle cholera toxin and, E7

and hexosamine synthesis pathway,

time course of, and high-fat diet, in dogs, E147

Insulin sensitivity

agent for increasing, effects on diabetic complications, in genetically obese diabetic rats, E989

modeling, minimal model validity, E925 and negative energy balance with exercise, E248

in neonate, E86

Interleukins

IL-1, host wasting induced by, mechanisms of, in rats, E333 IL-6, osteoblastic production of endothelin effects on, E461 stimulation by $PGF_{2}\alpha$, E208

Interstitial fluid

glucose kinetics in, compartmental model of, E494

Intestine, small

growth, induction by GLP-2, and intestinal function, in mice, E1050

Intrauterine growth retardation placental threonine transport and its utilization in, E892

protein synthesis and, in neonatal pigs, E877

in sheep, E275, E817

Islet amyloid polypeptide

gene expression, glucose regulation of, in rats. E543

Islets of Langerhans, see Pancreatic islets

Isocitrate

in human muscle, at rest and during exercise, E239

Isotopomer analysis

of fumarate metabolism in perfused rat heart, E74 of hepatic glucose cycling, E163 of rate of appearance of hepatic UDPglucose, E155

Ketone bodies

metabolism, in tumors, E945

Kidney

chemical sympathectomy, in rats, E227 effects of pioglitazone on, in genetically obese diabetic rats, E989

insulin analog processing in, in vivo, E1089

long-term alterations in, in diabetic dwarf rats, E918

oligopeptide assimilation by, physiological mechanisms and metabolic importance of, E723

in plasma glucose regulation, during hyperglycemia, E756

Kidney cells

LLC-PK1-F+, paracellular permeability, modulation by glutamate transport, E367

L

Lactate

formation, and renal glucose regulation during hyperglycemia, E756

production, by swine adipocytes, E957 in tracing liver metabolism, E51

Leptin

defect, in diabetic (db/db) mice, E267 gene expression, β3-adrenergic-mediated suppression of, in rats, E1031 serum levels, gender-dependent effects of exercise training on, in humans, E562

Leucine

effects on whole body leucine, valine, and threonine metabolism in humans, E1037

fetal, during metabolic acidosis, E275 in leucine-infused humans, E1037 nutrition and, in humans, E585 metabolism

in chronically hypoglycemic hypoinsulinemic fetal sheep, E107 in insulin-treated gestational diabe-

tes, E1099 splanchnic, nutrition and, E585 oxidation, in human newborns, E592

Lipases, see Lipoprotein lipase Lipids

metabolism

in obese Zucker rat, E656 recombinant human IGF-I and, differential effects of bolus vs. continuous subcutaneous delivery, E628 in resting skeletal muscle, functional

differences by fiber type, E340 production, quantitative analysis of, in AS-30D hepatoma cells, E945

Lipogenesis

hepatic, in copper deficiency, E1124 in obese Zucker rat, E656 quantitative analysis of, in AS-30D hepatoma cells, E945

Lipolysis

responsiveness to epinephrine, in diabetes, E1130

Lipopolysaccharide, see Endotoxin Lipoprotein lipase

activity, in obese Zucker rat, E656 gene expression, in skeletal muscle, transient induction by short-term exercise, E255

Liver

fatty acid synthase gene transcription, in copper deficiency, E1124

glucose cycling, effects of exogenous glucose on, in rats, E163

glucose 6-phosphate, effects of insulin on, in rhesus monkeys, E133

glucose production in children, E523

glucagon and, in humans, E371 in uncomplicated falciparum malaria, E1059

glucose uptake, effects of exogenous glucose on, in rats, E163

glycogen deposition, and rate of appearance of hepatic UDP-glucose, in rats, E155

glycogen synthase and glycogen phosphorylase activity, reciprocal regulation by insulin, in rhesus monkeys, E133

lipogenesis, in copper deficiency, E1124 metabolism

and thyroid status, in rats, E809 tracing, E51

rat, coenzyme A profiles in, carnitine and, E359

triiodothyronine/tryptophan uptake, and thyroid status, in rats, E809 UDP-glucose, rate of appearance, in rats, E155

Losartan

AT₁ receptor blockade by, and sympathoadrenal response, E415

LPS (lipopolysaccharide), see Endotoxin

Lung

development, retinol and, E25

Luteinizing hormone

secretion, glucoprivic inhibition of, opioid mediation of, E517

Lymph

thoracic duct, glucose kinetics in, compartmental model of, E494

Lymphocytes, T

CD4+, number, effects of exercise training on, E788

subpopulations

effects of exercise training on, E788 in zinc-deficient humans, E1002

Macrophage colony-stimulating factor

osteoblastic production of, endothelin and, E461

Macrophages

arginine metabolism, differential regulation of, E181

Magnesium ions

and parathyroid hormone release, E1 Malaria

hepatic glucose production and gluco-

neogenesis in, E1059 Malnutrition

cytokine-induced, mechanisms of, in rats, E333

Malonyl-CoA

inhibition of fatty acid oxidation, during exercise, E1065 in skeletal muscle, E262 regulation of, E641

MAP kinase, see Mitogen-activated protein kinase

Mass spectrometry

for measurement of tumor protein synthesis, E796

Mathematical modeling

of glucose kinetics in nonaccessible pools, E494 of human plasma melatonin, E506

Melanocortin receptors in agouti regulation of intracellular cal-

cium, E379 Melanocyte-stimulating hormone

α-MSH agouti antagonism of, E379

binding to mammotropes, E282

Melatonin

plasma levels, mathematical model of, for humans, E506

Messenger RNA

see also Gene expression storage, in mammotropes, E390

Metabolism

β-adrenergic receptor blockade and, E678

alteration, in rat embryos exposed to high glucose in diabetic pregnancy,

biotin, in humans, E83

in diabetes, studied using euglycemic and hypoglycemic insulin clamps,

insulin receptor isoforms and, in aged and mildly insulin-deficient rats,

recombinant human IGF-I and, differential metabolic effects of bolus vs. continuous subcutaneous delivery, E628

splanchnic, β-adrenergic receptor blockade and, E678

suppression, in skeletal muscle, insulin resistance caused by, E288

Methodologies

see also Isotopomer analysis

for calcium imaging, in pituitary cells,

for chronic electrical stimulation of skeletal muscle, in rats, E118

for euglycemic and hypoglycemic insulin clamps, E530

for gas chromatography-mass spectrometry of fumarate metabolism in isolated rat heart, E74

for mass isotopomer distribution analysis, E476

for measurement of muscle sympathetic nerve activity, E976

for measurement of tumor protein synthesis, E796

for measurement of whole body proteolysis, in humans, E1037

for measuring rate of appearance of hepatic UDP-glucose, in rats, E155

for peripheral insulin infusion, E371 for photonic imaging, in individual mammotropes, E390

for portal insulin infusion, E371

for pulse-chase studies, in resting skeletal muscle, E340

for steady-state and non-steady-state measurements of plasma glutamine turnover, in humans, E621

for tracing gluconeogenesis and citric acid cycle activity, E51

Methylenecyclopropaneacetic acid effects on coenzyme A profiles in rat liver, E359

3-Methylhistidine

secretion, during spaceflight, measurement of, E688

Mice

diabetic (db/db), brain glucose transporters in, E267 glucose utilization in, E267 intestinal function in, after GLP-2

treatment, E1050 ob/ob

hexosamine synthesis in, E1080 insulin secretion from cultured islets of, E304

pancreatic islets

insulin secretory responses, phospholipase C activation and, E671 isolation of, E671

transthyretin-null, thyroxine tissue uptake in, E485

viable yellow, and agouti regulation of intracellular calcium, E379

Microneurography

of muscle sympathetic nerve activity, E976

Mitochondria

embryonic, free oxygen radical production, and diabetic teratogenesis,

fatty acid entry into, during exercise, E1065

Mitogen-activated protein kinase and inhibition of cell growth by somatostatin, E769

Modeling in physiology

of glucose kinetics in nonaccessible pools, E494

of glucose-6-phosphatase in pancreatic islets, E696

of insulin receptor binding, E1136 of insulin secretion in relatives of

NIDDM patients, E218 of insulin sensitivity, minimal model validity, E925

mathematical

of glucose kinetics in nonaccessible pools, E494

of human plasma melatonin, E506 multicompartment, of body density, E781

of rate of appearance of hepatic UDPglucose, E155

of transthyretin and thyroxine tissue uptake, E485

Monkeys

energy expenditure in, dietary restriction and, E901

Monoacylglycerol

turnover, in resting skeletal muscle, functional differences by fiber type, E340

Multiple acyl-CoA dehydrogenation deficiencies

liver coenzyme A profiles in, studies in rats, E359

Muscle, skeletal

aged, IGF-I action in, exercise and,

branched-chain oxoacid dehydrogenase activity during exercise, and nutritional status, E233

contractile activity, signaling pathways induced by, GLUT-4 concentration in, E118

electrical stimulation

effects on acetyl-CoA carboxylase,

effects on AMP-activated protein kinase, E262

fatigue, in aging rats, E201

fiber types, lipid metabolism at rest, functional differences in, E340

glucose metabolism, suppression, insulin resistance caused by, E288

glucose transport cholera toxin and, E7

pertussis toxin and, E7 glucose uptake

in postnatal development, in rats, E446

regulation, in rats, E649

glucose utilization, during progressive starvation in late pregnancy, in rats, E556

GLUT-4

contraction-induced signals and,

during postnatal development in rats, E446

glutamine turnover, in normal postabsorptive humans, E437

hexosamines in, effects of exercise and feeding on, in rats, E848

hexosamine synthesis, in ob/ob mice, E1080

human, sarcolemmal glucose transport and GLUT-4 in, during exercise,

immobilized, myogenin expression, effects of clenbuterol on, E941

lipoprotein lipase gene expression, transient induction by short-term exercise, E255

malonyl-CoA in, regulation of, E641 and metabolic control in diabetes, studied using euglycemic and hypoglycemic insulin clamps, E530

myosin heavy chain, synthesis rate in healthy humans, E45

postprandial protein synthesis in, E841 protein breakdown, spaceflight and, in humans, E688

protein homeostasis, after metabolic stress, E36

protein synthesis, after exercise, studies in dogs, E1023

tricarboxylic acid cycle intermediates in, at rest and during exercise, E239

Muscle, smooth

hypertrophy, in diabetic rat, IGFBP-2 and, E297

heavy chain, muscle, synthesis rate in healthy humans, E45 isoforms, expression, in diabetes, E856

Nephropathy

effects of pioglitazone on, in genetically obese diabetic rats, E989

Neurohormones

in normal humans, E429

Newborn

human

euglycemic hyperinsulinemic clamp use in, E86 glucose production in, E86

insulin sensitivity in, E86 proteolysis in, suppression by amino

acids, E592 pigs, protein synthesis in, after intra-

uterine growth retardation, E877 rat model, survival, retinol requirement in midgestation and, E25

NIDDM, see Diabetes mellitus, noninsulin-dependent (NIDDM) Nitric oxide synthase

activity, and macrophage arginine metabolism, E181

forms of, E1008

gene expression, in myometrium of pregnant rat uterus, E1008 inducible, calcium-independent activity, E1008

Nitrogen balance

see also Proteins, turnover

after metabolic stress, dextrose vs. amino acid availability in, E36 Nitrogen balance (continued)

in elderly women, effects of recombinant human growth hormone and IGF-I on, E94

in human skeletal muscle, during spaceflight, E688

Non-insulin-dependent (type II) diabetes mellitus (NIDDM), see Diabetes mellitus, non-insulin-dependent (NIDDM)

Norepinephrine

spillover, direct quantification of, in dogs, E746

and transient induction of lipoprotein lipase gene expression in human skeletal muscle, E255

Nutrients

absorption, in GLP-2-treated mice,

availability during postexercise recovery, effects on muscle protein synthesis, in dogs, E1023

digestion, in GLP-2-treated mice, E1050

in insulin-dependent diabetes mellitus (IDDM), E59

and leucine metabolism, in humans, E585

0

Obesity

and agouti regulation of intracellular calcium, E379

and density of fat-free body mass, E781 dietary, in rats, E1043

genetic, mouse model, see Mice, ob/ob and growth hormone secretion in adults, E1108

insulin resistance in, time course of,

lactate production associated with, studies in pigs, E957

rat model, see Zucker rat

Oligopeptides

renal assimilation of, physiological mechanisms and metabolic importance of, E723

Opiates

endogenous, effects on brain-to-blood transport of corticotropin-releasing hormone, E312

Opioid receptors

central, mediation of glucoprivic inhibition of luteinizing hormone secretion, E517

Osteoblasts

differentiation, and regulation by ET-1, E967

endothelin A receptors, downregulation by osteogenic protein-1, E967

IL-6 production endothelin effects on, E461

stimulation by PGF2a, E208 thyroid hormone effects on, E212

Osteocalcin

gene expression, in osteoblast response to thyroid hormone, E212

Osteogenic protein-1 effects on ETA receptors, E967

Oxaloacetate

in human muscle, at rest and during exercise, E239

Oxidation

in insulin-treated gestational diabetes,

and metabolic control in diabetes, studied using euglycemic and hypoglycemic insulin clamps, E530

Oxidative stress

and contractile function of diaphragm, in aging rats, E201

effects on insulin responsiveness in 3T3-L1 adipocytes, E935

2-Oxoglutarate

in human muscle, at rest and during exercise, E239

uptake, by embryonic and fetal rat neural tissue, with maternal diabetes,

Oxygen consumption

dietary restriction and, in monkeys, E901

Oxygen-derived free radicals

and contractile function of diaphragm, in aging rats, E201

Oxytocin receptors

G protein coupling, in rat myometrium during labor, E870

Palmitate

oxidation, and incorporation into muscle lipid pools, E340

development, impairment, in undernourished rats, E634

neural tone, in dogs, E746

norepinephrine spillover and hormone output from, direct quantification of, in dogs, E746

Pancreatic islets

glucose-6-phosphatase in, modeling and measurement of, E696

insulin secretory responses, phospholipase C activation and, E671 isolation, E671

from ob/ob mice, insulin secretion by, in culture, E304

oscillatory insulin secretion, interislet synchronization in, E981

phosphoinositide metabolism, in diabetic rats, E737

insulin secretory responses, phospholipase C activation and, E671 islet amyloid polypeptide gene ex-

pression, glucose regulation of, E543

isolation, E671

Pancreatic polypeptide secretion, in dogs, E746

Paracellular permeability, see Permeability, paracellular

Parathyroid hormone

release

calcium-regulated, age-related changes in, E139 inhibition by magnesium, E1 regulation, E1

Parenteral nutrition

substrate oxidation in, E550

Parturition

oxytocin receptor coupling to G proteins in rat myometrium during, E870

prostaglandin-endoperoxide H synthase-2 expression and activity in chorion during, in humans, E832

Peptides

hydrolysis, E723 transport, in kidney, E723

Peptiduria

physiological significance of, E723

Permeability, paracellular

modulation by glutamate transport, in LLC-PK₁-F⁺ cells, E367

Pertussis toxin

and glucose transport in skeletal muscle, E7

Phenylalanine

hydroxylation, in human newborns, E592 Phorbol 12-myristate 13-acetate effects on insulin secretion by cultured islets from ob/ob mice, E304

Phosphate, inorganic

in contracting skeletal muscle, GLUT-4 concentration and, E118

Phosphatidylinositol 3-kinase

and glucose transport activity in 3T3-L1 adipocytes, E326

and insulin signaling in denervated muscles, E661

Phosphoinositide

hydrolysis, and IL-6 synthesis by osteoblasts, E208

metabolism, in pancreatic islets of diabetic rats, E737

Phospholipases

and IL-6 synthesis by osteoblasts,

in regulation of insulin secretion,

PLD, and IL-6 synthesis by osteoblasts, E208

Phospholipids

metabolism, in resting skeletal muscle, functional differences by fiber type,

Pigs

adipocytes, lactate production by, E957 newborn, protein synthesis in, after intrauterine growth retardation,

Pioglitazone

effects on diabetic complications, in rats, E989

Pituitary cells

GH₃, hyperpolarization-activated cation current in, E405

lactotrophs, hyperpolarization-activated cation current in, E405

mammotropes

α-MSH binding to, E282 prolactin release, regulation by ATP,

secretion, integration of, E390

rat, hyperpolarization-activated cation current in, E405

somatotrophs, hyperpolarization-activated cation current in, E405

Placenta

insufficiency, studies in sheep, E817 threonine transport, E892

Polymerase chain reaction

in observation of changes in renin mRNA expression, E227 reverse transcriptase

of endothelin receptors, E461 of insulin receptors, E607

Power spectral analysis

of interislet synchronization, in oscillatory insulin secretion, E981

Pregnancy

aldosterone secretion in, calcium channels and, E18

diabetes in, see Diabetes mellitus, gestational

diabetic, embryonic metabolism and, in rats, E173

late, glucose sparing during, in rats, E556

maintenance, and myometrial nitric oxide synthase expression, studies in rats, E1008

Prolactin

gene expression, in mammotropes, E390

release

regulation, by extracellular ATP, E1117

suckling-induced, in rats, E282 secretion, by mammotropes, E390

Propionate

short-term infusion, effects on food intake and blood parameters, in sheep, E997

Prostaglandin-endoperoxide H synthase-2

expression and activity, in chorion, peripartum, in humans, E832

Prostaglandins

in fetal response to subacute stress, E817

 $PGF_{2\alpha}$, stimulation of IL-6 synthesis by osteoblasts, E208

Protein, dietary

intake, and leucine metabolism, in humans, E585

metabolism in humans, E585

in normal postabsorptive humans, E437

restriction, in insulin-dependent diabetes mellitus (IDDM), metabolic adaptation to, E59

Protein kinases

see also Mitogen-activated protein kinase

AMP-activated, regulation, in muscle, E262

PKC

activation, and IL-6 synthesis by osteoblasts, E208

insulin secretion stimulated by, in cultured islets of ob/ob mice, E304

Proteins

accretion, fetal, during metabolic acidosis, E275

anabolism, see Proteins, turnover breakdown, see Proteins, turnover catabolism, see Proteins, turnover degradation, see Proteins, turnover metabolism

fetal, during metabolic acidosis, E275 recombinant human IGF-I and, differential effects of bolus vs. continuous subcutaneous delivery, E628

synthesis

in aged skeletal muscle, E397 in muscle

after exercise, studies in dogs, E1023 effects of recombinant human growth hormone and IGF-I on, in aging, E94

myosin heavy chain and, E45

postprandial stimulation of, E841 in tumor, measurement of, E796 turnover

after metabolic stress, dextrose versus amino acid availability and, E36

in elderly women, effect of growth hormone and IGF-I on, E94 in human newborns, E592

in muscle, E45
Proteolysis

amino acid suppression of, in newborn, E592

in human skeletal muscle, during spaceflight, E688 postabsorptive, in humans, E1037

Puberty

effects on glucose-fatty acid interactions, in humans, E523

Pyruvate

metabolism, in tracing liver metabolism, E51

Pyruvate dehydrogenase activity, in lipogenesis, E945

R

Rabbits

metabolism of heparin cofactor II and antithrombin, E824

RAS, see Renin-angiotensin system Ras signaling pathway

and glucose transport activity in 3T3-L1 adipocytes, E326

Rats

adult undernourished, insulin secretion in, E634

aging, contractile function of diaphragm, oxidative stress and, E201 brain, neuronal GLUT-3, induction by hypoglycemia, E716

cold-exposed, brown adipose tissue hyperplasia in, IGF-I and, E453

copper-deficient, hepatic lipogenesis in, E1124

cytokine-induced wasting in, mechanisms of, E333

diabetic

phosphoinositide metabolism in pancreatic islets of, E737

smooth muscle hypertrophy in, IG-FBP-2 and, E297

diabetic dwarf, renal changes in, E918 dietary obesity in, E1043

genetically obese diabetic, diabetic complications in, effects of pioglitazone on, E989

insulin analog kinetics in, in vivo, E1089

leptin gene expression in, β_3 -adrenergic-mediated suppression of, E1031 liver

coenzyme A profiles in, carnitine and, E359

triiodothyronine/tryptophan uptake, and thyroid status, E809

muscle glycogenolysis in, adenosine effects on, during contraction, E762 pancreatic islets

insulin secretory responses, phospholipase C activation and, E671 isolation of, E671

preclinical screening of strontium as marker for intestinal calcium absorption in, E422 pregnant

glucose sparing in, during progressive starvation, E556 myometrial nitric oxide synthase expression in, E1008

myometrial oxytocin receptor coupling to G proteins in, during labor, E870

renin synthesis, stimulation by thyroid hormone, E227

skeletal muscle

cell surface GLUT-4, effects of exercise training on, E320 denervated, insulin signaling in,

E661

glucose transport, effects of exercise training on, E320

hexosamines in, effects of exercise and feeding on, E848

suppression of glucose metabolism in, insulin resistance caused by, E288 spinal-cord-injured, scoliosis reduction

by clenbuterol in, E712 Zucker, see **Zucker rat**

Renin

synthesis, stimulation by thyroid hormone, in rats, E227

Renin-angiotensin-aldosterone system

activity, during growth hormone treatment, E803

Renin-angiotensin system

in rats, E227

Retinol

requirement for, during midgestation, and neonatal survival, E25

Reverse triiodothyronine metabolism, and alcoholism, E191

Ruminants, see Sheep

 \mathbf{s}

Satiety

in propionate-infused sheep, E997

in spinal-cord-injured rat, reduction by clenbuterol, mechanisms of, E712

Sheep

endocrine responses to subacute stress, E817

leucine kinetics and protein metabolism during metabolic acidosis, E275

threonine utilization by, E892

Skeletal muscle

cell surface GLUT-4, effects of exercise training on, studies in isolated rat muscle, E320

denervated, insulin signaling in, in rats, E661

glucose transport, effects of exercise training on, studies in isolated rat muscle, E320

malonyl-CoA in, E262

Sleep

progesterone-induced changes in, in males, E885

Sodium ions

metabolism, growth hormone therapy and, renin-angiotensin-aldosterone system activity in, E803

Somatostatin

inhibition of cell growth by, E769

Spaceflight

human skeletal muscle protein breakdown during, E688

Spinal cord

injury, scoliosis due to, reduction by clenbuterol, in rats, E712 Spironolactone

effects, on growth hormone-induced regulation of fluid balance, E803

Spiropentaneacetic acid

effects on coenzyme A profiles in rat liver, E359

Stable isotope tracers

see also Isotopomer analysis; Water, doubly labeled

for acetoacetate metabolism in AS-30D cells, E945

for compartmental model of glucose kinetics in interstitial fluid, E494

for fatty acid oxidation analysis, during exercise, E1065

for fetal leucine metabolism, in sheep, E107

for fumarate metabolism in isolated rat heart, E74

for gluconeogenesis and citric acid cycle activity, E51

for glucose production and gluconeogenesis analysis, in uncomplicated falciparum malaria, E1059

for insulin analogs, in vivo, E1089 for leucine metabolism analysis, in hu-

mans, E585 for lipolytic responsiveness to epineph-

rine, E1130 for measurement of tumor protein synthesis. E796

for oxidative metabolism analysis, in insulin-treated gestational diabetes, E1099

for proteolysis analysis, in human newborns, E592

for substrate oxidation analysis, E550 for whole body proteolysis, in humans, E1037

Starvation

in late pregnancy, glucoregulation during, in rats, E556

Steroidogenesis

in pregnancy, E18 Steroids

adrenal, effects on brain-to-blood transport of corticotropin-releasing hormone, E312

pharmacology of, in vascular endothelium, E616

Stress

metabolic, skeletal muscle protein homeostasis after, E36

Strontium ions

as marker for intestinal calcium absorption, preclinical screening of, in rats, E422

pharmacokinetics of, in rats, E422

Substrate utilization

in insulin-treated gestational diabetes, E1099

Succinate

formation, and cardioprotective effects of fumarate in isolated rat heart, E74

in human muscle, at rest and during exercise, E239

Superoxide

generation, in neural tissue of rat embryos, and hyperglycemia in diabetic pregnancy, E173

Sympathetic nervous system

activity

after converting enzyme inhibition in normal humans, E429 in muscle, age-related increase in, and abdominal adiposity, E976 interaction with angiotensin II, AT₁ receptor blockade and, E415

T

TCA cycle, see Citric acid cycle Thermogenesis

autonomic nervous system and, in lean individuals, E775

during chronic toxoplasmosis, E908 differences in, in fatty (fa/fa) and heterozygous (+/fa) rats, E100

nonshivering, in cold-exposed rats, E453

nutrient-induced, E678 in lean individuals, E775

Threonine

kinetics, in leucine-infused humans, E1037

Thyroid gland

disorders, effects on hepatic metabolism, in rats, E809

Thyroid hormone receptors cardiac, in diabetes, E856

Thyroid hormones

see also Reverse triiodothyronine; Thyroxine; Triiodothyronine

effects on osteoblasts, E212 effects on renin synthesis, in rats, E227 metabolism, and alcoholism, E191 and tryptophan transport in rat liver, E809

Thyroid response element

in diabetes, E856

Thyroxine

kinetics, in transthyretin-null mice, E485

metabolism

and alcoholism, E191 in transthyretin-null mice, E485

tissue uptake of, in transthyretin-null mice, E485

Toxoplasmosis

chronic, energy balance and cytokine gene expression during, E908

Translation initiation

regulation of, by feeding, E841

Transthyretin

and thyroxine tissue uptake, in transthyretin-null mice, E485

Triacylglycerol

turnover, in resting skeletal muscle, functional differences by fiber type, E340

Tricarboxylic acid cycle, see Citric acid cycle

Triglycerides

chain length, and substrate oxidation in parenteral nutrition, E550

oxidation, in insulin-treated gestational diabetes, E1099

serum, during short-term exercise, and transient induction of lipoprotein lipase gene expression in skeletal muscle, E255

Triiodothyronine

see also Reverse triiodothyronine metabolism, and alcoholism, E191 and tryptophan transport in rat liver, E809 Tumor

see also Hepatoma; Insulinoma protein synthesis, measurement of, E796

Tumor necrosis factor

host wasting induced by, mechanisms of, in rats, E333 and lipid metabolism, in obese Zucker rat, E656

U

UDP-glucose

hepatic effects of exogenous glucose on, in rats, E163

rate of appearance, in rats, E155

Undernutrition

during development, effects on insulin secretion, in adult rats, E634 effects on insulin secretion, in adult rats, E634

prenatal, effects on insulin secretion, in adult rats, E634

Uterus

of pregnant rat

myometrial nitric oxide synthase expression in, E1008

myometrial oxytocin receptor coupling to G proteins in, during labor, E870

V

Valine

kinetics, in leucine-infused humans, E1037

Vasopressin

cell surface aminopeptidase activity toward, in adipocytes, insulin stimulation of, E600

effects on heart rate, after converting enzyme inhibition in normal humans, E429

secretion, and central administration of endothelin-1, in rats, E126

itamin A

in embryonic development, and neonatal survival, E25

W

Wasting

cytokine-induced, mechanisms of, in rats, E333

Water, doubly labeled

for measurement of daily energy expenditure, in heart failure, E469

Wound healing

and macrophage arginine metabolism, E181

X

Xanthine oxidase

and contractile function of diaphragm, in aging rats, E201

7

Zinc

and immune function, in humans, E952, E1002 metabolism, endotoxin effects on, in hu-

mans, E952

Zucker rat

obese, anti-TNF treatment and lipid metabolism in, E656

Author Index to Volume 35

Abumrad, N. N., E756 Ackermans, M. T., E1059 Adibi, S. A., E723 Ahlrichs, J. A., E592 Aikawa, E., E989 Ajmal, M., E756 Aksnes, A.-K., E678 Alex, S., E212 Alexander, S., E976 Allen, K. G. D., E1124 Allison, R. G., E530 Alvarez, C., E634 Anderson, A. H., E892 Anderson, S., E68 Annat, G., E550 Apazidis, A., E641 Argilés, J. M., E656 Arnqvist, H. J., E297 Arsenijevic, D., E908 Arslanian, S., E523 Asano, T., E326 Asher, M., E967 Aslesen, R., E649 Auboeuf, D., E607

Bagby, G. J., E656 Bailbé, D., E737 Baillie, R., E1124 Balagopal, P., E45 Baldwin, K. M., E856 Banks, W. A., E312 Bansal, R. K., E1008 Baracos, V., E397 Baran, D. T., E212 Barto, R., E422 Bärtsch, P., E788 Bashan, N., E935 Battaglia, F. C., E892 Beaufrère, B., E584 Beck, F. W. J., E1002 Benner, A., E788 Bertrand, O., E550 Beylot, M., E51 Bianda, T. L., E352 Bier, D. M., E437 Bistrian, B. R., E333 Bjørn, S. F., E918 Black, S. M., E1008 Blajchman, M. A., E824 Bleumer, E. J. B., E997 Bobin, S. A., E600 Bock, S., E155 Bodell, P. W., E856 Bodkin, N. L., E133 Boirie, Y., E584 Bonen, A., E340 Bongers, L. J. G. M., E997 Borel, M. J., E36 Bouchard, C., E248 Bouffard, Y., E550 Braverman, L. E., E212 Brewer, G. J., E1002 Briski, K. P., E517 Brochu, M., E18 Brørs, O., E649 Brown, E. N., E506 Brozinick, J. T., Jr., E320 Brubaker, P. L., E1050

Brundin, T., E678 Brunengraber, H., E51 Bucci, A., E437 Burrin, D. G., E877 Burton, K. A., E453 Buscher, C., E1008 Buse, M. G., E848, E1080 Butler, P. C., E218, E352 Butte, N. F., E1099 Butterfield, G. E., E94

Caldwell, M. D., E181 Carey, G. B., E957 Caro, J. F., E562 Cartee, G. D., E446 Carver, T. D., E107 Casamitjana, R., E543 Castaño, J. P., E282, E390 Castle, A. L., E118 Caveggion, E., E494 Cayol, M., E584 Cersosimo, E., E756 Cervenka, T., E147 César, D., E155 Chadan, S., E397 Challis, J. R. G., E817 Chandramouli, V., E1059 Chang, H. R., E908 Chang, L.-W., E981 Chen, H., E126 Chen, N.-G., E304 Chen, Y., E297 Cherrington, A. D., E567, E746 Chevalier, D., E367 Choe, Y., E506 Christ, M., E616 Christiansen, J. S., E352, E803, E1108 Clarke, S. D., E1124 Cline, C. C., E201 Coast, J. R., E201 Cobelli, C., E494 Cole, T. G., E255 Considine, R. V., E562 Corkey, B. E., E359 Cowett, R. M., E86 Cox, T. N., E446 Criscimagna, N., E967 Cryer, P. E., E1130 Cushman, S. W., E320, E864 Czeisler, C. A., E506

Dailey, G., E437 Damrau-Abney, A., E661 Dauncey, M. J., E453 David, T. S., E661, E1071 Davis, S. N., E567 Davis, T. A., E877 Davy, K. P., E976 De Jonge, L., E775 Dekker, E., E1059 Delafosse, B., E550 Delday, M. I., E941 DeLuca, H. F., E25 Demmelmair, H., E796 Demura, H., E989 Demura, R., E989 Denne, S. C., E592

Després, J.-P., E248 Des Rosiers, C., E74 Deurenberg, P., E781 Dige-Petersen, H., E415 Divertie, G. D., E1130 Doi, T., E1023 Dorcus, E. J., E86 Döring, H., E100 Drenckhan, M., E576 Dröge, W., E788 Drucker, D. J., E1050 Duchamp, C., E453 Dulloo, A. G., E908 Dunham, B., E567 Dunning, B. E., E746 Dyck, D. J., E340

Ekberg, K., E1059 Ellis, K. J., E1099 Elmendorf, J. S., E661, E1071 Episkopou, V., E485 Erbe, N., E788 Ercan-Fang, N., E720 Eriksson, U. J., E173 Etgen, G. J., Jr., E864 Etlinger, J. D., E712

Faix, D., E163 Farrag, H. M., E86 Farrar, R. P., E118 Faught, W. J., E282, E390 Fehm, H.-L., E576 Fennessey, P. V., E107, E892 Fiorotto, M. L., E877 Fisher, M. L., E469 Fiskum, G., E945 Fitzgerald, J. T., E1002 Fitzpatrick, L. A., E1 Flakoll, P. J., E36 Flyvbjerg, A., E918 Fraher, L., E817 Frandsen, E., E415, E803 Frawley, L. S., E282, E390, E1117 Friedmann, B., E788 Friess, E., E885 Froesch, E. R., E352 Fujii, Y., E769

G

Gachon, P., E584 Gaetke, L. M., E952 Gagnon, R., E817 Galbo, H., E7 Gallagher, D., E781 Gangnerau, M.-N., E737 Garrel, D. R., E775 Gasa, R., E543 Gastaldelli, A., E494, E1065 Gavigan, K. E., E562 Geary, N., E720 Géloën, A., E453 Gerich, J. E., E437, E621 Gettys, T. W., E282, E1080 Giacca, A., E371 Gibala, M. J., E233, E239

Gibbs, E. M., E267 Girardier, L., E908 Giroix, M.-H., E737 Glatz, J., E340 Glavé, E. E., E390 Goldsmith, S. R., E429 Gomis, R., E543 Goran, M. I., E469 Gorski, J., E340 Gottesman, M. E., E485 Gottlieb, S. S., E469 Goudable, J., E550 Goya, L., E634 Graham, T. E., E233, E239 Gresores, A., E68 Grodberg, J., E696 Grønbæk, H., E918 Guerra, A. N., E446 Gulve, E. A., E1080 Gustafsson, B., E297

Hack, V., E788 Haddad, F., E856 Halloran, B. P., E139 Hamada, K., E1023 Hamadeh, M. J., E1037 Hammond, B. J., E1136 Han, X., E7 Hansen, B. C., E133 Håkan Borg, L. A., E173 Hardie, D. G., E262 Hargreaves, M., E385 Hartl, W. H., E796 Harvey, S. A. K., E967 Hatton, M. W. C., E824 Hay, W. W., Jr., E68, E107 Hayashi, M., E227 Haymond, M. W., E628 Hays, M. T., E485 He, Y., E1008 Healey, J. E., E86 Heckler, B. K., E957 Heding, A., E1089 Heird, G. M., E83 Hellerstein, M. K., E155, E163 Herbst, J. J., E600 Hespel, P., E762 Heymsfield, S. B., E781 Hibbard, J. C., E36 Hickey, M. S., E562 Hill, M., E1050 Hintz, R. L., E94 Hoffer, L. J., E59, E1037 Hoffman, A. R., E94 Holleran, A. L., E945 Holness, M. J., E556 Holsboer, F., E885 Hood, D., E68 Hoogendoorn, H., E824 Houmard, J. A., E562 Hsu, B. Y. L., E359 Hsu, H. W., E1099 Hu, Z., E201 Hultman, E., E233 Hunt, D. G., E864 Hussain, M. A., E352 Hutber, C. A., E262

1

Ibsen, H., E415 Ichihara, A., E227 Imaizumi, K., E1023 Imaki, T., E989 Inagaki, N., E769 Inukai, K., E326 Ishihara, H., E326 Israel, R. G., E562 Ittoop, O., E379 Ivy, J. L., E118, E649, E864 Izzo, A., E1050

J

Jabbour, K., E36
Jackman, M. L., E233
Jauch, K.-W., E796
Jefferson, L. S., E841
Jensen, I., E1089
Jensen, J., E649, E864
Jensen, M. D., E1130
Jenssen, T. G., E437
Jiao, Y., E245
Jodoin, S., E18
Jones, P. P., E976
Jørgensen, J. O. L., E803, E1108

K

Kaempfer, S., E155 Kager, P. A., E1059 Kang, M.-I., E212 Kaplan, J., E1002 Kaptein, E. M., E191 Karn, C. A., E592 Kastin, A. J., E312 Katagiri, H., E326 Katz, A., E245 Katz, J., E476 Keizer, H., E340 Kelleher, J. K., E945 Keller, S. R., E600 Kemnitz, J. W., E901 Kemp, H. F., E809 Kenan, Y., E1043 Kiefer, L. L., E379 Kiens, B., E340 Kikuchi, M., E326 Kim, J. H., E379 Kim, J. K., E288 Kim, S., E1124 Kimball, S. R., E841 Kitten, A. M., E967 Klein, H. H., E576 Klein, P. D., E1099 Klein, S., E1065 Kling, S. J., E461 Kobori, H., E227 Kohan, D. E., E461 Koletzko, B., E796 Koning, J. S., E848 Kowalewski, B., E576 Kozawa, O., E208 Kozlovsky, N., E935 Kreider, M. E., E621 Kristiansen, S., E385 Kruse, V., E1089 Kuo, T.-S., E981 Kurowski, T. G., E641

L

Lacy, D. B., E530 Landau, B. R., E1059 Langhans, W., E720 Laplante, A., E74 Large, V., E51 Lawler, J. M., E201 Lee, J. C., E967 Leitch, C. A., E592 Letscher, A., E155 Leuvenink, H. G. D., E997 Levinson, M., E1043 Lewis, G. F., E371 Li, G., E696 Li, H., E1031 Liechty, E. A., E592 Lienhard, G. E., E600 Lieu, Y. K., E359 Lin, B. J., E981 Ling, P. R., E333 Liu, S., E340 Ljungqvist, O., E45 Lonergan, E. T., E139 López-Soriano, F. J., E656 López-Soriano, J., E656 Lundholm, K., E841

M

Maercklein, P. B., E1 Mair, K., E255 Maltin, C. A., E941 Mamer, O. A., E1037 Marcus, R., E94 Mari, A., E925 Marker, P., E147 Martha, P. M., Jr., E628 Martín, M. A., E634 Martins, J. M., E312 Matheny, M., E1031 Matschinsky, F. M., E696 Matsumoto, K., E1023 Mauras, N., E628 McCall, A. L., E716 McCammon, M. R., E562 McClain, C. J., E952 McCue, S. A., E856 McMahon, E. G., E1080 McNeill, J. H., E30 Meschia, G., E892 Meyer, C., E621 Midgette, J. B., E562 Mijovic, J. E., E832 Miki, H., E1 Miles, J. M., E1130 Milley, J. R., E275 Mills, C. D., E181 Miyashita, Y., E227 Miyazaki, M., E769 Mock, D. M., E83 Moise, K. J., E1099 Molina, P. E., E756 Møller, J., E803 Møller, N., E803 Moon, J. K., E1099 Morin, L., E737 Morreale de Escobar, G., E485 Morris, N. J., E600 Murata, T., E326 Murotsuki, J., E817

N

Nadeau, A., E248 Naim, M., E1043 Nair, K. S., E45 Nairn, T. K., E832 Najafi, H., E696 Nakajima, N., E769 Naruse, K., E989 Naruse, M., E989 Natuzzi, E. S., E1008 Naukam, R. J., E756 Nawrath, L. M., E86 Neal, D., E567 Neal, D. W., E746 Neese, R., E155 Neese, R. A., E163 Nelson, B. A., E848 Netelenbos, J. C., E422 Nguyen, H. V., E877 Nichols, J., E379 Nieuwenhuizen-Bakker, I. M., E607 Nipper, V., E716 Nishikawa, M., E989 Norback, D. H., E25 Normand, S., E550 Novials, A., E543 Nuñez, L., E1117 Nurjhan, N., E437 Nusser, K. D., E282 Nuttall, F. Q., E720 Nyholm, B., E218, E352

0

Obled, C., E584 Odeon, M., E51 Ogihara, T., E326 Oh, W., E86 Oka, Y., E326 Okamura, K., E1023 O'Leary, D. S., E126 Olson, D. M., E832 Olson, M. S., E967 Oppert, J.-M., E248 Ørskov, H., E918, E1108 Ortmeyer, H. K., E133 Orvig, C., E30 Østerby, R., E918

P

Pachiaudi, C., E550 Palha, J. A., E485 Parkhouse, W. S., E397 Pascual-Leone, A. M., E634 Perkins, S. L., E461 Permin, L., E1089 Perriello, G., E437 Peters, S. J., E340 Petersen, L. N., E7 Picard, S., E18 Pierson, R. N., Jr., E781 Pike, A. W., E107 Pincus, S. M., E218 Pines, M., E1043 Ploug, T., E7 Poehlman, E. T., E469 Poindexter, B. B., E592 Poirier, M., E74 Pond, W. G., E877 Pørksen, N., E218, E352 Portale, A. A., E139 Portha, B., E634, E737 Potashnik, R., E935 Prasad, A. S., E1002 Price, W. A., E359 Prugnaud, J., E584

Q

Quarmby, V., E628 Quick, A. A., E107 Radder, J. K., E607 Rambourdin, F., E584 Ramsey, J. J., E901 Rapoza, R. E., E86 Rennie, M. J., E94 Reynolds, T. H., IV, E320 Richards, J. R., E181 Richardson, B. S., E817 Richter, E. A., E340, E385, E762 Riemer, R. K., E1008 Riou, J. P., E607 Rivera, F., E543 Robinson, K. A., E848, E1080 Robitaille, L., E1037 Rocchini, A. P., E147 Roecker, E. B., E901 Rogers, M. A., E320 Romijn, J. A., E1059 Romsos, D. R., E304 Rosenblatt, J., E494 Ross, B., E824 Ross, S. A., E600 Rossi, N. F., E126 Ruderman, N. B., E641 Rudich, A., E935

5

Rupprecht, R., E885

Russell, B. S., E390

Saha, A. K., E641 Sakurai, M., E1023 Sankaranarayanan, S., E405 Saraiva, M. J. M., E485 Sarraj, E., E461 Saruta, T., E227 Sauerwein, H. P., E1059 Scarpace, P. J., E1031 Scharrer, E., E720 Schiffrin, A., E59 Schildberg, F. W., E796 Schluter, M. D., E688 Schmidt, H.-L., E796 Schmidt, I., E100 Schmitz, O., E218, E352 Schneider, M., E616 Schwartz, J. H., E333 Schwarz, J.-M., E155, E163, E494 Schwarzer, K., E100 Schykowski, M., E788 Scott, H. M., E600 Scott, M. F., E746 Seals, D. R., E976 Seino, S., E769 Seip, R. L., E255 Seki, T., E989 Semenkovich, C. F., E255 Seydoux, J., E908 Shackleton, C. H. L., E155 Shafrir, E., E641 Shanahan, T. L., E506 Shashkin, P. N., E245 Shavers, C., E567 Shearer, J. D., E181 Shedlofsky, S. I., E952 Shi, J., E1016 Shibasaki, Y., E326 Shimizu, S., E1023 Sidossis, L. S., E1065 Simasko, S. M., E405 Simpkins, J. W., E1016

Simpson, I. A., E267

Sips, A. J. A. M., E422

Skjærbæk, C., E218, E1108 Smith, G. D., E1136 Smith, T. R., E661, E1071 Soloff, M. S., E870 Southward, S. M. R., E824 Spriet, L. L., E340 Stanley, C. A., E359 Stein, T. P., E688 St-Leuis, J., E18 Strakova, Z., E870 Stumvoll, M., E437, E621 Sugden, M. C., E556 Suprasongsin, C., E523 Suttner, S., E788 Suwanwalaikorn, S., E212 Suzuki, A., E208 Suzuki, H., E227 Suzuki, M., E1023 Svanberg, E., E841 Sweet, I. R., E696

T

Tagaya, H., E885 Talwalkar, R. T., E952 Tanabe, A., E989 Tanney, D. M., E139 Tarnopolsky, M. A., E239 Taveroff, A., E59, E1037 Tayek, J. A., E476 Taylor, P. M., E809 Teng, C. C., E107 Terasaki, J., E326 Thériault, G., E248 Thompson, J., E94 Thuy, L. T. D., E1059 Tikerpae, J., E1136 Toffolo, G., E494 Toft, I., E437 Tokuda, H., E208 Toth, M. J., E469 Traber, D. L., E494 Traber, L. D., E494 Trachsel, L., E885 Tremblay, A., E248 Truesdale, A., E379 Turinsky, J., E661, E1071 Turner, S., E155, E163 Tyndall, G. L., E562

U

Uehara, Y., E716 Uematsu, T., E208 Ulsenheimer, A., E616

V

Vahl, N., E1108 Van Auken, M., E212 Van Bruchem, J., E997 Van der Heide, D., E997 Van der Vijgh, W. J. F., E422 Van der Vusse, G. J., E340 Vannucci, S. J., E267 Van Thien, H., E1059 Vavvas, D., E641 Veldhuis, J. D., E218, E352, E1108 Vergauwen, L., E762 Viale, J. P., E550 Vidal, H., E607 Villalobos, C., E282, E1117 Vincent, G., E74 Visser, M., E781 Volmers, P., E918 Vranic, M., E371

M

Wahren, J., E678, E1059 Walmsley, K., E567 Wang, J., E592, E781 Wasserman, D. H., E530 Wehling, M., E616 Weidner, M. L., E562 Weindruch, R., E901 Weiss, C., E788 Welbourne, T. C., E367 Welle, S., E437, E621 Wellik, D. M., E25 Westerblad, H., E245 Wetter, T. J., E446 Wiersma, M. M. L., E607 Wilkening, R. B., E892 Wilkison, W. O., E379 Willard, D., E379 Williams, P. E., E36, E567 Williamson, D. H., E656

Willis, P. E., E397 Wilson, C. M., E864 Wilson, J., E1124 Winder, W. W., E262 Witters, L. A., E641 Wolfe, R. R., E494, E1065 Wolthers, T., E803 Wong, W. W., E1099 Worck, R. H., E415 Woychik, R. P., E379 Wu, K., E155, E163

Y

Yang, X., E173 Yao, N.-K., E981 Yaspelkis, B. B., III, E118 Yazaki, Y., E326 Yoshimoto, T., E989 Yoshioka, Y., E1023 Yoshitomi, H., E769 Youn, J. H., E288 Yuen, V. G., E30

- 5

Zakar, T., E832 Zawalich, K. C., E671 Zawalich, W. S., E671 Zeman, R. J., E712 Zemel, M. B., E379 Zerbe, G. O., E68 Zhang, Y., E712 Zheng, T., E282 Zinker, B. A., E530

